

Title (en)  
SINTERING MATERIALS AND ATTACHMENT METHODS USING SAME

Title (de)  
SINTERMATERIALIEN UND BEFESTIGUNGSVERFAHREN DAMIT

Title (fr)  
FRITTAGE DE MATÉRIAUX ET PROCÉDÉS D'ATTACHEMENT L'UTILISANT

Publication  
**EP 3154729 A4 20180228 (EN)**

Application  
**EP 15806611 A 20150612**

Priority  
• IN 2873CH2014 A 20140612  
• US 2015035566 W 20150612

Abstract (en)  
[origin: WO2015192004A1] Methods for die attachment of multichip and single components including flip chips may involve printing a sintering paste on a substrate or on the back side of a die. Printing may involve stencil printing, screen printing, or a dispensing process. Paste may be printed on the back side of an entire wafer prior to dicing, or on the back side of an individual die. Sintering films may also be fabricated and transferred to a wafer, die or substrate. A post-sintering step may increase throughput.

IPC 8 full level  
**B22F 3/10** (2006.01); **B22F 5/00** (2006.01); **B22F 7/02** (2006.01); **B23K 35/02** (2006.01); **B23K 35/30** (2006.01); **C22C 1/04** (2006.01); **H01L 23/00** (2006.01); **H05K 1/09** (2006.01); **B22F 1/16** (2022.01); **B22F 1/17** (2022.01); **B22F 7/04** (2006.01)

CPC (source: EP KR US)  
**B22F 1/07** (2022.01 - US); **B22F 1/10** (2022.01 - KR); **B22F 3/1017** (2013.01 - EP KR US); **B22F 3/22** (2013.01 - EP KR US); **B22F 5/006** (2013.01 - EP KR US); **B22F 7/04** (2013.01 - EP KR US); **B23K 1/0016** (2013.01 - US); **B23K 3/0607** (2013.01 - US); **B23K 35/0244** (2013.01 - EP US); **B23K 35/3006** (2013.01 - EP US); **B33Y 10/00** (2014.12 - KR); **H01L 21/6835** (2013.01 - EP KR US); **H01L 21/78** (2013.01 - US); **H01L 24/11** (2013.01 - EP KR US); **H01L 24/13** (2013.01 - EP KR US); **H01L 24/27** (2013.01 - EP US); **H01L 24/29** (2013.01 - EP KR US); **H01L 24/75** (2013.01 - EP KR US); **H01L 24/81** (2013.01 - EP US); **H01L 24/83** (2013.01 - EP KR US); **H01L 24/94** (2013.01 - EP US); **H01L 24/95** (2013.01 - EP US); **H01L 24/97** (2013.01 - EP US); **B22F 1/17** (2022.01 - EP US); **B22F 2007/047** (2013.01 - EP US); **B22F 2301/255** (2013.01 - US); **B22F 2999/00** (2013.01 - EP US); **B23K 2101/40** (2018.08 - EP US); **H01L 24/05** (2013.01 - EP US); **H01L 24/16** (2013.01 - EP US); **H01L 24/32** (2013.01 - EP US); **H01L 24/84** (2013.01 - EP US); **H01L 24/85** (2013.01 - EP US); **H01L 2221/68313** (2013.01 - EP US); **H01L 2221/68368** (2013.01 - EP US); **H01L 2224/04026** (2013.01 - EP US); **H01L 2224/05155** (2013.01 - EP US); **H01L 2224/05639** (2013.01 - EP US); **H01L 2224/11003** (2013.01 - EP US); **H01L 2224/11009** (2013.01 - EP US); **H01L 2224/111** (2013.01 - EP US); **H01L 2224/11332** (2013.01 - US); **H01L 2224/11334** (2013.01 - US); **H01L 2224/11438** (2013.01 - EP US); **H01L 2224/1144** (2013.01 - EP US); **H01L 2224/11505** (2013.01 - US); **H01L 2224/11848** (2013.01 - EP US); **H01L 2224/13139** (2013.01 - US); **H01L 2224/13294** (2013.01 - EP US); **H01L 2224/13295** (2013.01 - EP US); **H01L 2224/13311** (2013.01 - EP US); **H01L 2224/13324** (2013.01 - EP US); **H01L 2224/13339** (2013.01 - EP US); **H01L 2224/13347** (2013.01 - US); **H01L 2224/13355** (2013.01 - EP US); **H01L 2224/13363** (2013.01 - EP US); **H01L 2224/1338** (2013.01 - EP US); **H01L 2224/13384** (2013.01 - EP US); **H01L 2224/13387** (2013.01 - EP US); **H01L 2224/1339** (2013.01 - EP US); **H01L 2224/13393** (2013.01 - US); **H01L 2224/13411** (2013.01 - US); **H01L 2224/13439** (2013.01 - US); **H01L 2224/13444** (2013.01 - US); **H01L 2224/13455** (2013.01 - US); **H01L 2224/13464** (2013.01 - US); **H01L 2224/13469** (2013.01 - US); **H01L 2224/1349** (2013.01 - EP US); **H01L 2224/16227** (2013.01 - EP US); **H01L 2224/27002** (2013.01 - EP US); **H01L 2224/27003** (2013.01 - EP US); **H01L 2224/27009** (2013.01 - EP US); **H01L 2224/271** (2013.01 - EP US); **H01L 2224/27312** (2013.01 - EP US); **H01L 2224/2732** (2013.01 - EP US); **H01L 2224/27332** (2013.01 - US); **H01L 2224/27334** (2013.01 - US); **H01L 2224/27438** (2013.01 - EP US); **H01L 2224/2744** (2013.01 - EP US); **H01L 2224/27505** (2013.01 - US); **H01L 2224/2782** (2013.01 - EP US); **H01L 2224/27821** (2013.01 - EP US); **H01L 2224/27848** (2013.01 - EP US); **H01L 2224/29139** (2013.01 - US); **H01L 2224/29294** (2013.01 - EP US); **H01L 2224/29295** (2013.01 - EP US); **H01L 2224/29311** (2013.01 - EP US); **H01L 2224/29324** (2013.01 - EP US); **H01L 2224/29339** (2013.01 - EP US); **H01L 2224/29344** (2013.01 - EP US); **H01L 2224/29347** (2013.01 - EP US); **H01L 2224/29355** (2013.01 - EP US); **H01L 2224/29363** (2013.01 - EP US); **H01L 2224/29364** (2013.01 - EP US); **H01L 2224/2938** (2013.01 - EP US); **H01L 2224/29384** (2013.01 - EP US); **H01L 2224/29387** (2013.01 - EP US); **H01L 2224/2939** (2013.01 - EP US); **H01L 2224/29393** (2013.01 - US); **H01L 2224/29411** (2013.01 - US); **H01L 2224/29439** (2013.01 - US); **H01L 2224/29444** (2013.01 - US); **H01L 2224/29455** (2013.01 - US); **H01L 2224/29464** (2013.01 - US); **H01L 2224/29469** (2013.01 - US); **H01L 2224/2949** (2013.01 - EP US); **H01L 2224/2969** (2013.01 - EP US); **H01L 2224/32225** (2013.01 - EP US); **H01L 2224/32245** (2013.01 - EP US); **H01L 2224/45014** (2013.01 - EP US); **H01L 2224/75251** (2013.01 - EP US); **H01L 2224/75316** (2013.01 - EP US); **H01L 2224/7598** (2013.01 - EP US); **H01L 2224/81002** (2013.01 - EP US); **H01L 2224/81191** (2013.01 - EP US); **H01L 2224/8184** (2013.01 - EP US); **H01L 2224/81948** (2013.01 - EP US); **H01L 2224/83002** (2013.01 - EP US); **H01L 2224/83191** (2013.01 - EP US); **H01L 2224/83193** (2013.01 - EP US); **H01L 2224/83222** (2013.01 - EP US); **H01L 2224/83439** (2013.01 - EP US); **H01L 2224/83444** (2013.01 - EP US); **H01L 2224/83447** (2013.01 - EP US); **H01L 2224/8384** (2013.01 - EP US); **H01L 2224/83948** (2013.01 - EP US); **H01L 2224/94** (2013.01 - EP US); **H01L 2224/95** (2013.01 - EP US); **H01L 2224/97** (2013.01 - EP US); **H01L 2924/00014** (2013.01 - EP US); **H01L 2924/0463** (2013.01 - US); **H01L 2924/0503** (2013.01 - US); **H01L 2924/05032** (2013.01 - US); **H01L 2924/20105** (2013.01 - US); **H01L 2924/20106** (2013.01 - US); **H01L 2924/20107** (2013.01 - US); **H01L 2924/20108** (2013.01 - US); **H01L 2924/20109** (2013.01 - US); **H01L 2924/2011** (2013.01 - US); **H01L 2924/2064** (2013.01 - US); **H05K 3/32** (2013.01 - EP US); **H05K 2203/1131** (2013.01 - EP US)

C-Set (source: EP US)  
EP

1. **H01L 2224/94 + H01L 2224/11**
2. **H01L 2224/111 + H01L 2924/00012**
3. **H01L 2224/97 + H01L 2224/81**
4. **H01L 2224/97 + H01L 2224/83**
5. **H01L 2224/94 + H01L 2224/27**
6. **H01L 2224/271 + H01L 2924/00012**
7. **H01L 2224/83447 + H01L 2924/00014**
8. **H01L 2224/83444 + H01L 2924/00014**
9. **H01L 2224/83439 + H01L 2924/00014**

10. H01L 2224/2732 + H01L 2924/00014
  11. H01L 2224/27312 + H01L 2924/00014
  12. H01L 2224/95 + H01L 2224/27
  13. H01L 2224/29294 + H01L 2924/00014
  14. H01L 2224/94 + H01L 2224/81
  15. H01L 2224/94 + H01L 2224/83
  16. H01L 2224/29364 + H01L 2924/00014
  17. H01L 2224/29347 + H01L 2924/00014
  18. H01L 2224/29324 + H01L 2924/00014
  19. H01L 2224/29339 + H01L 2924/01046
  20. H01L 2224/29344 + H01L 2924/01046
  21. H01L 2224/13339 + H01L 2924/01029
  22. H01L 2224/13339 + H01L 2924/01042
  23. H01L 2224/13339 + H01L 2924/01028
  24. H01L 2224/13339 + H01L 2924/0105
  25. H01L 2224/13311 + H01L 2924/00014
  26. H01L 2224/29311 + H01L 2924/00014
  27. H01L 2224/13355 + H01L 2924/00014
  28. H01L 2224/29355 + H01L 2924/00014
  29. H01L 2224/1338 + H01L 2924/00014
  30. H01L 2224/2938 + H01L 2924/00014
  31. H01L 2224/29384 + H01L 2924/00014
  32. H01L 2224/13384 + H01L 2924/00014
  33. H01L 2224/13324 + H01L 2924/00014
  34. H01L 2224/29363 + H01L 2924/01006
  35. H01L 2224/13363 + H01L 2924/01006
  36. H01L 2224/13387 + H01L 2924/0503 + H01L 2924/01005
  37. H01L 2224/29387 + H01L 2924/0503 + H01L 2924/01005
  38. H01L 2224/13387 + H01L 2924/0463 + H01L 2924/01005
  39. H01L 2224/29387 + H01L 2924/0463 + H01L 2924/01005
  40. H01L 2224/13387 + H01L 2924/05032
  41. H01L 2224/29387 + H01L 2924/05032
  42. H01L 2224/27848 + H01L 2924/00012
  43. H01L 2224/05639 + H01L 2924/00014
  44. H01L 2224/05155 + H01L 2924/00014
  45. H01L 2224/27821 + H01L 2924/00014
  46. H01L 2224/2782 + H01L 2924/00012
  47. H01L 2224/13294 + H01L 2924/00014
  48. H01L 2224/11848 + H01L 2924/00012
  49. H01L 2924/00014 + H01L 2224/45015 + H01L 2924/207
  50. H01L 2224/83222 + H01L 2924/00014
  51. H01L 2924/00014 + H01L 2224/45014 + H01L 2924/206
  52. B22F 2999/00 + B22F 1/17 + B22F 1/054
  53. B22F 2999/00 + B22F 1/054 + B22F 1/17
- US

1. B22F 2999/00 + B22F 1/054 + B22F 1/17
2. H01L 2224/94 + H01L 2224/11
3. H01L 2224/111 + H01L 2924/00012
4. H01L 2224/97 + H01L 2224/81
5. H01L 2224/97 + H01L 2224/83
6. H01L 2224/94 + H01L 2224/27
7. H01L 2224/271 + H01L 2924/00012
8. H01L 2224/83447 + H01L 2924/00014
9. H01L 2224/83444 + H01L 2924/00014
10. H01L 2224/83439 + H01L 2924/00014
11. H01L 2224/2732 + H01L 2924/00014
12. H01L 2224/27312 + H01L 2924/00014
13. H01L 2224/95 + H01L 2224/27
14. H01L 2224/29294 + H01L 2924/00014
15. H01L 2224/94 + H01L 2224/81
16. H01L 2224/94 + H01L 2224/83
17. H01L 2224/29364 + H01L 2924/00014
18. H01L 2224/29347 + H01L 2924/00014
19. H01L 2224/29324 + H01L 2924/00014
20. H01L 2224/29339 + H01L 2924/01046
21. H01L 2224/29344 + H01L 2924/01046
22. H01L 2224/13339 + H01L 2924/01029
23. H01L 2224/13339 + H01L 2924/01042
24. H01L 2224/13339 + H01L 2924/01028
25. H01L 2224/13339 + H01L 2924/0105
26. H01L 2224/13311 + H01L 2924/00014
27. H01L 2224/29311 + H01L 2924/00014
28. H01L 2224/13355 + H01L 2924/00014
29. H01L 2224/29355 + H01L 2924/00014
30. H01L 2224/1338 + H01L 2924/00014
31. H01L 2224/2938 + H01L 2924/00014
32. H01L 2224/29384 + H01L 2924/00014
33. H01L 2224/13384 + H01L 2924/00014
34. H01L 2224/13324 + H01L 2924/00014
35. H01L 2224/29363 + H01L 2924/01006
36. H01L 2224/13363 + H01L 2924/01006
37. H01L 2224/13387 + H01L 2924/0503 + H01L 2924/01005
38. H01L 2224/29387 + H01L 2924/0503 + H01L 2924/01005

39. H01L 2224/13387 + H01L 2924/0463 + H01L 2924/01005
40. H01L 2224/29387 + H01L 2924/0463 + H01L 2924/01005
41. H01L 2224/13387 + H01L 2924/05032
42. H01L 2224/29387 + H01L 2924/05032
43. H01L 2224/27848 + H01L 2924/00012
44. H01L 2224/05639 + H01L 2924/00014
45. H01L 2224/05155 + H01L 2924/00014
46. H01L 2224/27821 + H01L 2924/00014
47. H01L 2224/2782 + H01L 2924/00012
48. H01L 2224/13294 + H01L 2924/00014
49. H01L 2224/11848 + H01L 2924/00012
50. H01L 2924/00014 + H01L 2224/45015 + H01L 2924/207
51. H01L 2224/83222 + H01L 2924/00014
52. H01L 2924/00014 + H01L 2224/45014 + H01L 2924/206
53. B22F 2999/00 + B22F 1/17 + B22F 1/054

Citation (search report)

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Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**WO 2015192004 A1 20151217**; BR 112016029118 A2 20170822; CN 106660120 A 20170510; EP 3154729 A1 20170419; EP 3154729 A4 20180228; JP 2017525839 A 20170907; JP 2020056110 A 20200409; JP 2022062715 A 20220420; JP 2024045324 A 20240402; JP 7001659 B2 20220119; JP 7489956 B2 20240524; KR 102424487 B1 20220725; KR 20170013927 A 20170207; KR 20190016142 A 20190215; KR 20200142123 A 20201221; KR 20220106240 A 20220728; KR 20240112953 A 20240719; US 11389865 B2 20220719; US 2017144221 A1 20170525

DOCDB simple family (application)

**US 2015035566 W 20150612**; BR 112016029118 A 20150612; CN 201580037893 A 20150612; EP 15806611 A 20150612; JP 2016572384 A 20150612; JP 2019216135 A 20191129; JP 2021210036 A 20211224; JP 2024009864 A 20240126; KR 20167036636 A 20150612; KR 20197003667 A 20150612; KR 20207035949 A 20150612; KR 20227025309 A 20150612; KR 20247022325 A 20150612; US 201515316684 A 20150612